Proposal for 2-Days Certificate Programme (Self-Financed) on "**Effective Image Processing Tools for Novice: Learn Image Processing for Contemporary Applications**"

Scheduled Dates: **1st & 2nd December 2017**

Introduction

Image processing is a prominent field of research and development which has become a keen interest of researchers in past few decades. With the advancements in mobile technology and latest trends in social media, it is in more demand in the industry besides its traditional and contemporary applications in various fields. Image processing is now also being used in forensics, security, medical science and data analytics with a lot of scope in other fields of research. The digital image processing used for photographs and other conventional camera images are still in vogue. Thus, it is the demand of present time to learn image processing effectively and efficiently to utilize the skills in robust manner for various applications. The proposed program is for the beginners to learn image processing tools in an effective way by providing the exposure to image processing tools and to discuss contemporary problems for future research.

Objectives

- To provide an exposure of image processing to naïve users
- To teach the image processing tools to beginners
- To provide a hands on experience of image processing tools
- To discuss research ideas and topics in image processing and applications

Methodology

The program will be conducted in form of lectures followed by hands-on. Each session will have a dedicated section for discussion. One dedicated session will be for discussion of the problems raised by the research scholars followed by proposed solution by the experts.

Topics to be Covered

1. Image Processing Toolbox

   a. Image basics: Read/write imaged data from files, Image type conversion, Image sequence, Image color basics
   b. Image Display: Image viewer, Display multiple and different types of images, Interactive image display, Pixel details, Crop images, Image colormaps, Volume data display
   c. Image Filtering & Enhancement: Contrast and brightness, Contrast adjustment, Image intensity adjustment, Image histogram & histogram processing, Histogram equalization, Image arithmetic

d. Segmentation and Analysis: Edge detection, Line and boundary detection, Texture analysis, Image segmentation & classification

2. Independent Component Analysis

   a. Introduction and Mathematical Background for Blind Source Separation
   b. Blind Source Separation using Independent Component Analysis (ICA)
   c. FastICA Toolbox

3. Applications of Image Processing in Research Topics:
   a. General Imaging, Remote Sensing, Medical Imaging, Biometrics
   b. ICA Applications in Cocktail Party Problem, denoising, Security & forensics investigations etc.
   c. Open Problems

Target Audience:

UG/PG/PhD students of Engineering/IT Institutions and Universities; Research Scholars/Fellows/Associates and working professionals interested in Image Processing/Police & Intelligence Departments etc.

Registration Fee (Including Food & Lodge arrangements)

Rs. 1750/- (GST Included)

Coordinators & Resource Persons

Dr. Triloki Pant (Assistant Professor)
Dr. Vrijendra Singh (Associate Professor)
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